

Atty. Docket No.: Q57834
PATENT APPLICATION

AMENDMENT UNDER 37 C.F.R. § 1.114(c)
U.S. Application No.: 09/497,515

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (*Currently Amended*) An electrode for a fuel cell comprising:
a catalyst layer; and
a porous polymer having numerous pores of the porous polymer material itself, wherein said catalyst layer contains a solid polymer electrolyte and catalyst particles, and said porous polymer does not substantially contain anything except its polymer material, does not substantially have an ion-exchange function and is provided in a portion of pores of said catalyst layer or both in said portion and on a the surface of said catalyst layer.

2. (*Cancelled*).

3. (*Currently Amended*) An electrode for a fuel cell comprising:
a catalyst layer;
a gas diffusion layer; and
a porous polymer having numerous pores of the porous polymer material itself, wherein said catalyst layer contains a solid polymer electrolyte and catalyst particles, ~~and~~ said gas diffusion layer contains an electro-conductive porous substrate, and

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said porous polymer does not substantially contain anything except its polymer material, does not substantially have an ion-exchange function and is provided in a portion of pores of said catalyst layer or an inside portion of said substrate.

4-5. (*Cancelled*).

6. (*Previously Presented*) The electrode according to claim 1 or 3, wherein pores of said porous polymer form a three-dimensional network structure.

7. (*Original*) The electrode according to claim 1 or 3, wherein an average diameter of pores in said porous polymer is 1 μm or less.

8. (*Original*) The electrode according to claim 1 or 3, wherein an average diameter of pores in said porous polymer is 0.05 μm or less.

9. (*Previously Presented*) The electrode according to claim 1 or 3, wherein a porosity of said porous polymer is within the range of 45% to 95%.

10. (*Previously Presented*) The electrode according to claims 1 or 3, wherein said porous polymer is fluorocarbon polymer.

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11. (*Withdrawn*) A method of manufacturing porous polymer according to claim 1 or 3 comprising the step of: separating a polymer (a) from the solution (c) in which the polymer (a) is dissolved in a solvent (b) by the phase inversion process.

12. (*Withdrawn*) A method of manufacturing porous polymer according to claim 1 or 3 comprising the step of : extracting a solvent (b) from the solution (c), in which a polymer (a) dissolved in the solvent (b), with the non solvent (d) which is insoluble in the polymer (a) and miscible with the solvent (b).

13. (*Withdrawn*) A method of manufacturing an electrode for a fuel cell comprising the steps of:

preparing an electrode (j) comprising a catalyst layer containing a solid polymer electrolyte and catalyst particles;

preparing a solution (c) in which a polymer (a) is dissolved in a solvent (b);

allowing said solution (c) to be contained in said electrode; and

separating said polymer (a) from said solution (c).

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14. (*Withdrawn*) A method of manufacturing an electrode for a fuel cell comprising the steps of :

preparing an electrode (j) comprising a catalyst layer containing a solid polymer electrolyte and catalyst particles;

preparing a solution (c) in which a polymer (a) is dissolved in a solvent (b);

allowing said solution (c) to be contained in said electrode; and

extracting said solvent (b) from the said solution (c) with a non solvent (d) which is insoluble in said polymer (a) and miscible with the solvent (b).

15. (*Withdrawn*) The method according to claim 13 or 14, wherein the electrode (j) further comprises a gas diffusion layer containing the electro-conductive porous substrate.

16. (*Withdrawn*) The method according to claim 13 or 14, wherein said electrode (j) is being joined to the ion-exchange membrane.

17. (*Withdrawn*) A method for manufacturing an electrode for a fuel cell comprising the steps of:

preparing a gas diffusion layer containing an electro-conductive porous substrate;

preparing a catalyst layer (k) containing a solid polymer electrolyte and catalyst particles;

preparing a solution (c) in which a polymer (a) is dissolved in a solvent (b);

allowing said solution (c) to be contained in said gas diffusion layer;

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separating said polymer (a) from said solution (c); and
joining said gas diffusion layer to said catalyst layer (k).

18. (*Withdrawn*) A method of manufacturing an electrode for a fuel cell comprising the steps of:

preparing a gas diffusion layer containing an electro-conductive porous substrate;
preparing a catalyst layer (k) containing a solid polymer electrolyte and catalyst particles;
preparing a solution (c) in which a polymer (a) is dissolved in a solvent (b);
allowing said solution (c) to be contained in said gas diffusion layer;
extracting said solvent (b) from said solution (c) with a non solvent (d) which is insoluble in said polymer (a) and miscible with the solvent (b); and
joining said gas diffusion layer to said catalyst layer (k).

19. (*Withdrawn*) The method according to claim 17 or 18, wherein said catalyst layer (k) is being joined to the ion-exchange membrane.

20. (*Withdrawn*) The method according to claim 13, 14, 17 or 18, further comprising the step of: fluorinating said porous polymer.